WHAT IS CLAIMED IS:

1. A front-illuminating device comprising:

a light source; and

a light-directing body that is placed in front of an object to be illuminated, the light-directing body having an incident surface on which light from the light source is made incident, a first light-releasing surface from which light is released to the object to be illuminated and a second light-releasing surface, placed face to face with the first light-releasing surface, for releasing light reflected from the object to be illuminated,

wherein the second light-releasing surface is formed into a step shape in which slanting portions for reflecting light mainly from the light source toward the first light-releasing surface and flat portions for transmitting light reflected mainly from the object to be illuminated are alternately placed.

2. The front-illuminating device as defined in claim 1, wherein supposing that said light-directing body is a first light-directing body, the front-illuminating device is further provided with a second light-directing body for averaging the luminance distribution of light released from the first light-releasing surface.

3. The front-illuminating device as defined in claim 2, wherein the second light-directing body has a first surface facing the first light-releasing surface of the first light-directing body and a second surface that faces the first surface and releases light that has been made incident thereon from the first light-directing body through the first surface,

wherein the first surface and the second surface are designed so that the distance from the slanting portions on the second light-releasing surface of the first light-directing body to the surface of the second surface is set virtually uniform.

4. The front-illuminating device as defined in claim 3, wherein refractive indexes of the first light-directing body and the second light-directing body are virtually equal to each other.

5. The front-illuminating device as defined in claim 3, wherein the first light-directing body and the second light-directing body are formed into an integral part.

6. The front-illuminating device as defined in claim 3, wherein an optical means, which suppresses light from the second light-releasing surface of the first light-directing

body from being reflected by the second surface, is placed on the second surface of the second light-directing body as a third light-directing body.

7. The front-illuminating device as defined in claim 6, wherein the optical means is an anti-reflection film.

8. The front-illuminating device as defined in claim 6, wherein the optical means is bonded to a second light-directing body by a bonding agent having a refractive index that is virtually equal to a refractive index of the second light-directing body.

9. The front-illuminating device as defined in claim 2, wherein the second light-directing body is a light-diffusing body that diffuses light from the first light-releasing surface of the first light-directing body.

10. The front-illuminating device as defined in claim 9, wherein: the light-diffusing body is an anisotropic diffusing body for diffusing only light that is incident thereon from within a predetermined angle range, and at least one portion of an angle range in which the light released from the first light-directing body is made incident on the second light-directing body is included

within said predetermined angle range.

11. The front-illuminating device as defined in claim 9, wherein the light-diffusing body is a front-diffusing body.

12. The front-illuminating device as defined in claim 2, wherein said second light-directing body is an optical means which suppresses light from the second light-releasing surface of the first light-directing body from being reflected by the first light-releasing surface of the first light-directing body.

13. The front-illuminating device as defined in claim 12, wherein the optical means is an anti-reflection film.

14. The front-illuminating device as defined in claim 12, wherein the optical means is bonded to a second light-directing body by a bonding agent having a refractive index that is virtually equal to a refractive index of the second light-directing body.

15. The front-illuminating device as defined in claim 2, wherein a filler is introduced into a gap between the first light-directing body and the second light-directing

body so as to alleviate the difference of refractive indexes on an optical interface located between the light-directing bodies.

16. The front-illuminating device as defined in claim 15, further comprising:

a light-controlling means for restricting spread of light from the light source to a range in which light components directly made incident on the first light-releasing surface of the first light-directing body from the incident surface are virtually eliminated, the light-controlling means being placed between the light source and the incident surface.

17. The front-illuminating device as defined in claim 1, wherein the incident surface is located on a side face of the light-directing body.

18. The front-illuminating device as defined in claim 17, wherein a sum of projections of the slanting portions onto a flat surface perpendicular to the first light-releasing surface is virtually equal to a projection of the incident surface onto the flat surface.

19. The front-illuminating device as defined in claim

17, wherein the incident surface and the first light-releasing surface are set so as to make an obtuse angle.

20. The front-illuminating device as defined in claim 1, further comprising:

a light-converging means for allowing light from the light source to be made incident only on the incident surface.

21. The front-illuminating device as defined in claim 1, wherein a sum of projections of the slanting portions onto the first light-releasing surface is smaller in area than a sum of projections of the flat portions onto the first light-releasing surface.

22. The front-illuminating device as defined in claim 1, wherein the flat portions are set in parallel with the first light-releasing surface, or set to have an angle of inclination of not more than 10° with respect to the first light-releasing surface.

23. The front-illuminating device as defined in claim 1, wherein supposing that the refractive index of the light-directing body is n_2 and that the refractive index of an external medium contacting the slanting portions is n_1, the

incident angle θ of light that is to be made incident on the slanting portions from the light source satisfies the following inequality:

$\theta \geq \arcsin(n_1/n_2)$

24. The front-illuminating device as defined in claim 1, wherein a reflective member for reflecting light is placed on the surface of the slanting portions.

25. The front-illuminating device as defined in claim 24, wherein supposing that the refractive index of the light-directing body is n_2 and that the refractive index of an external medium contacting the slanting portions is n_1, the incident angle θ of light that is to be made incident on the slanting portions from the light source satisfies the following inequality:

$\theta < \arcsin(n_1/n_2)$

26. The front-illuminating device as defined in claim 24, wherein a light-shielding member is installed on the surface of the reflective member.

27. The front-illuminating device as defined in claim 1, further comprising:

a compensating means for aligning light-releasing

directions of a light ray released from each flat portion and a light ray released from each slanting portion on the second light-releasing surface.

28. The front-illuminating device as defined in claim 27, wherein: the compensating means has a first surface facing the second light-releasing surface of the light-directing body and a second surface facing the first surface, and the first surface of the compensating means is formed into a step shape in which slanting faces virtually parallel to the slanting portions of the second light-releasing surface of the light-directing body and flat faces virtually parallel to the flat portions of the second light-releasing surface are alternately placed in a manner so as to conform to the second light-releasing surface, and the second surface of the compensating means is placed virtually in parallel with the first light-releasing surface of the light-directing body.

29. The front-illuminating device as defined in claim 27, wherein: the compensating means comprises:

areas on which light rays mainly released from the slanting portions of the second light-releasing surface are made incident, and

areas on which light rays mainly released from the flat

portions of the second light-releasing surface are made incident, the respective areas being set to have refractive indexes different from each other.

30. The front-illuminating device as defined in claim 27, wherein the compensating means comprises:

diffraction elements that are placed on the areas on which light rays mainly released from the slanting portions of the second light-releasing surface are made incident.

31. The front-illuminating device as defined in claim 27, wherein the compensating means comprises:

a light-shielding member that is placed on the areas on which light rays mainly released from the slanting portions of the second light-releasing surface are made incident.

32. The front-illuminating device as defined in claim 1, further comprising:

a light-controlling means for restricting spread of light from the light source, placed between the light source and the incident surface.

33. The front-illuminating device as defined in claim 32, wherein said light-controlling means limits spread of light from the light source to a range in which the incident

angles of the light rays directly made incident on the slanting portions of the second light-releasing surface from the incident surface are made greater than the critical angle.

34. A front-illuminating device comprising:

a light source; and

a light-directing body that is placed in front of an object to be illuminated, the light-directing body having a flat bottom surface, a surface facing the bottom surface and an incident surface on which light from the light source is made incident,

wherein the surface is formed into a step shape in which flat portions that are virtually parallel to the bottom surface and slanting portions that are inclined in the same direction to the flat sections are alternately placed.

35. The front-illuminating device as defined in claim 1, wherein the sum of a pitch of the flat portions and a pitch of the slanting portions that are formed on the light-directing body is set to become smaller as the distance from the incident surface increases.

36. The front-illuminating device as defined in claim

1, wherein the width of the slanting portions on the second light-releasing surface is made smaller than the width of the flat portions thereof.

37. The front-illuminating device as defined in claim 1, wherein the addition of the width of the flat portions and the width of the slanting portions in the light-directing body is set in a range from not less than 0.05 mm to not more than 1.0 mm.

38. The front-illuminating device as defined in claim 1, wherein, supposing that the width of the flat portions is w_1 and the width of the slanting portions is w_2, the ratio w_2/w_1 of the width of the slanting portions to the width of the flat portions is set in a range from not less than 0.01 to not more than 0.2.

39. The front-illuminating device as defined in claim 1, wherein, supposing that the width of the flat portions is w_1 and the width of the slanting portions is w_2, the ratio w_2/w_1 of the width of the slanting portions to the width of the flat portions increases as it departs from the light incident surface.

40. A reflection-type liquid crystal display

comprising:

a reflection-type liquid crystal element having a reflective plate,

wherein the front-illuminating device as disclosed in claim 1 is placed in front of the reflection-type liquid crystal element.

41. The reflection-type liquid crystal display as defined in claim 36, wherein the reflection-type liquid crystal element is provided with scanning lines, the scanning lines having a pitch that is virtually equal to the pitch of the flat portions on the second light-releasing surface of the front-illuminating device, the flat portions being placed above the scanning lines.

42. The reflection-type liquid crystal display as defined in claim 36, wherein a sum of pitches of the flat portions and the slanting portions on the second light-releasing surface of the front-illuminating device is smaller than a pitch of the scanning lines.

43. The reflection-type liquid crystal display as defined in claim 36, wherein a sum of pitches of the flat portions and the slanting portions on the second light-releasing surface of the front-illuminating device is

greater than a pitch of the scanning lines.

44. The reflection-type liquid crystal display as defined in claim 36, wherein the reflection-type liquid crystal element is provided with a reflective plate having a surface on which protrusions and recesses are formed.

45. The reflection-type liquid crystal display as defined in claim 40, wherein the reflective plate is a reflective electrode that also functions as a liquid crystal driving electrode for driving a liquid crystal layer of the reflection-type liquid crystal element, the reflective plate being adjacent to the liquid crystal layer.

46. The reflection-type liquid crystal display as defined in claim 36, wherein the front-illuminating device is attached to the reflection-type liquid crystal element so as to be freely opened and closed.

47. A reflection-type liquid crystal display comprising:

a front-illuminating device as disclosed in claim 27 that is placed in front of a reflection-type liquid crystal element having a reflective plate,

wherein: the compensating means has flexibility

responding to a predetermined pressure, and a pair of position-detecting means, which detect a position to which a pressure is given by contacting each other, are respectively installed on the compensating means and the second light-releasing surface.

48. The reflection-type liquid crystal display as defined in claim 43, wherein: the reflection-type liquid crystal element is provided with scanning lines, and the position-detecting means has transparent electrodes formed on the flat portions of the second light-releasing surface, pitches of the scanning lines and the transparent electrodes being virtually equal to each other, the transparent electrodes being placed above the scanning lines.

49. A front-illuminating device comprising:

a light source;

a light-directing body that is placed in front of an liquid crystal element that is an object to be illuminated, the light-directing body having an incident surface on which light from the light source is made incident, a first light-releasing surface from which light is released to the liquid crystal element to be illuminated and a second light-releasing surface, placed face to face with the first light-releasing surface, for releasing light reflected from the

liquid crystal element to be illuminated;

a periodic structure that is formed on the second light-releasing surface and that includes a transmitting section for transmitting light from the light source and a reflection section for reflecting the light from the light source toward the first light-releasing surface that are alternately placed,

wherein the periodic structure is formed on the second light-releasing surface in such a manner that the periodic structure has an angle in a range of not less than 10° to not more than 75° with respect to a repeating direction of a pixel arrangement formed on the liquid crystal element periodically, when placed in front of the liquid crystal element.

50. The front-illuminating device as defined in claim 45, wherein the transmitting section has a width smaller than that of the reflection section in the periodic structure.

51. The front-illuminating device as defined in claim 45, wherein the periodic structure including the transmitting section and the reflection section has a width in a range of not less than 0.05 mm to not more than 1.0 mm.

52. The front-illuminating device as defined in claim 45, wherein, supposing that the transmitting section has a width of P1 and that the reflection section has a width of P2, P2/P1, which is a ratio of the width of the reflection section to the width of the transmitting section, is set in a range of not less than 0.01 to not more than 0.02.

53. The front-illuminating device as defined in claim 45, wherein, supposing that the transmitting section has a width of P1 and that the reflection section has a width of P2, P2/P1, which is a ratio of the width of the reflection section to the width of the transmitting section, is made greater as it departs from the incident surface.

54. The front-illuminating device as defined in claim 45, wherein a light-shielding means, which prevents light transmitted through the light-directing body from being released from the second light-releasing surface, is placed on a portion of the light-directing body that corresponds to the reflection section on the second light-releasing surface.

55. The front-illuminating device as defined in claim 50, wherein the light-shielding means has a surface that is subject to a low reflection treatment for suppressing

reflection of light.

56. A reflection-type liquid crystal display comprising:

a reflection-type liquid crystal element having a reflective plate,

wherein the front-illuminating device as defined in claim 45 is installed in front of the reflection-type liquid crystal element.

57. A reflection-type liquid crystal display comprising:

a reflection-type liquid crystal element having a reflection place,

wherein the front-illuminating device as defined in claim 46 is installed in front of the reflection-type liquid crystal element.